mNutrition EVALUATION

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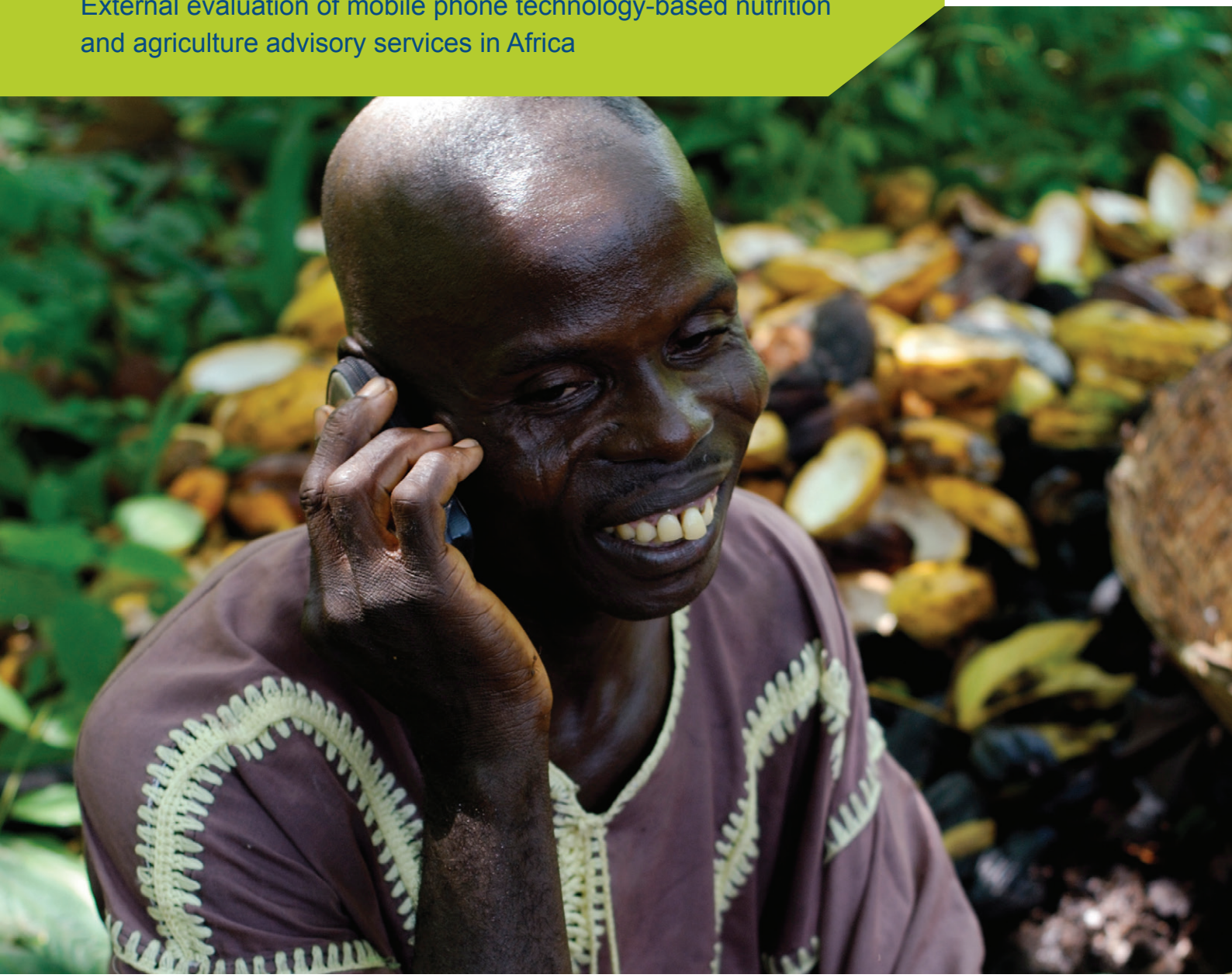
BRIEFING REPORT

Ghana final mixed methods evaluation report summary

External evaluation of mobile phone technology-based nutrition and agriculture advisory services in Africa



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1

The mNutrition intervention in Ghana

mNutrition was a six-year global initiative supported by the UK Foreign, Commonwealth & Development Office (FCDO) between 2013 and 2019, organised by Groupe Spéciale Mobile Association (GSMA), and implemented by in-country mobile network operators (MNOs), which sought to use mobile technology to improve the health and nutritional status of children and adults in low-income countries around the world. The nutrition content of the programme aimed to promote behaviour change around key dietary and child feeding practices likely to result in improved nutritional health within a household.

In Ghana, mNutrition was implemented through an mAgri platform called Vodafone Farmers Club (VFC). This service was a 'bundled solution', offering agriculture and nutrition information through SMS messages, voice messages, and an expert call centre (provided by Esoko), as well as offering free calls to others with VFC SIM cards. The content aimed to promote behaviour change around key farming decisions and practices, as well as around other household practices (e.g. safe food storage and preservation, the nutrient content of food, etc.), that were likely to result in improved nutritional health within a household.

This brief provides a summary of the findings in the Ghana final mixed methods evaluation report which presents the final findings from the evaluation structured around the evaluation questions. It draws on evidence from each methodological component to address each question as comprehensively as possible. The report deliberately presents the results in a way that is accessible to, and actionable for, non-technical audiences, including policymakers. In-depth technical and methodological details and discussions are included in the detailed method-specific reports.

Front cover: A farmer talks on a mobile phone. Bayerebon 3, Western Region, GHANA © Aubrey Wade/Panos Pictures
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2

Evaluation objectives and methodology

A consortium of researchers from Gamos, the Institute of Development Studies (IDS), and the International Food Policy Research Institute (IFPRI) was contracted by FCDO to undertake an impact evaluation of VFC in Ghana. The objectives of the evaluation were to assess the impact, cost effectiveness, and commercial viability of VFC. The field data collection for this evaluation covered the period from October 2016 until April 2019. The evaluation used a theory-based mixed methods approach with three interlinked components, as follows:

- A **quantitative component**, which used a randomised encouragement design to determine the causal effect of VFC on dietary diversity, agricultural income, and productivity. The encouragement design did not restrict access to VFC, but instead worked by randomly assigning some communities to receive additional marketing and promotion from the evaluation team, to encourage uptake of VFC. Because the encouragement was randomly assigned, the systematic variation in take-up of VFC could be used to measure the causal impact of the programme as the difference in outcomes between encouraged and comparison communities at endline. Quantitative data collection took place in Central Region (CR) and Upper West Region (UWR) in Ghana.

- A **qualitative impact evaluation**, which consisted of three qualitative data collection rounds and which took place in a purposefully selected sub-sample of quantitative villages in CR and UWR, where the encouragement intervention had taken place (i.e. the treatment villages). It aimed to provide in-depth understanding of the context, assumptions, underlying mechanisms of change, and the implementation process of VFC**.**

- A **business model and cost-effectiveness evaluation**, which employed stakeholder interviews, commercial and end user data analysis, document analysis, and evidence from the quantitative and qualitative evaluations. These data were used to generate a business model framework and to estimate the wider imputed benefits from the value-added service (VAS) for the range of stakeholders involved.

3 Main findings and recommendations

The evaluation found that the overall reach of VFC was low. In particular, female farmers and poor farmers were often excluded, as they had limited or no access to a mobile phone. The limited reach of VFC can be explained by shortcomings in the available supportive infrastructure, the capacity of the intended VFC recipients, and limitations in the implementation and design of VFC:

- The availability of supportive infrastructure is an important requirement to enable a mobile phone-based information service to effectively reach the intended target group in a chosen context. This includes adequate signal coverage and strength of the network that provides the service (here Vodafone), sufficient autonomy of the target group in relation to access to a mobile phone (i.e. access is not controlled and restricted by the owner), or ownership of a mobile phone (especially among female farmers), and easy access to electricity to charge the mobile phone (without long down times due to lack of electricity). If these requirements are not met for a large proportion of the intended target group, alternative modes of content delivery (e.g. via radio or community outreach) or blended approaches (e.g. radio and community workers) may have a wider reach and be more inclusive.
- Introducing a mobile phone-based service with a new SIM card can pose a barrier to the effective reach of the service as farmers who own a mobile phone usually already own at least one (preferred) SIM card that they regularly use. Consequently, there is no perceived need or demand for an additional SIM card and no incentive to use it regularly.
- Offering a mobile phone-based service through a network that is not the preferred network in a location (e.g. Vodafone in CR) is likely to lead to only low take-up of and sustained engagement with the service.
- The delivery modalities of mobile phone-based information services need to be chosen based on the capacity of the target audience (e.g. in areas with high levels of illiteracy, voice-based services only).
- Illiteracy and the inability to understand English were major barriers to the uptake of the VFC SMS messages on price and weather. We recommend offering the content of SMS messages as recorded voice messages (in local languages). However, as weather and price information are highly time-sensitive and context-specific, and voice messages are more expensive to deliver and produce, providing this information as recorded voice messages may increase the implementation costs of VFC considerably (thus making the service less likely to be commercially viable).
- Farmers missed a large proportion of the recorded voice messages as they had no voicemail set up, or were unaware of how to access their voicemail to capture missed voice calls. This implementation challenge at the end user level is easy to address and is likely to have a significant impact on the reach of recorded voice messages.
- The sharing of agriculture and nutrition advice provided by VFC between farmers could increase the reach of the service considerably, including to farmers who are currently excluded (e.g. because they cannot afford a mobile phone). However, the evaluation suggests that sharing does not frequently happen. VFC should consider experimenting with approaches to actively encourage message sharing (e.g. by sending reminders to share and highlighting the benefits of sharing, such as better well-being of the entire community).

- The customer journey is key for the successful reach of a mobile phone-based information service. Provision must be made to help customers understand the service, to register easily, and to subscribe transparently and painlessly. It is important that field agents are trained and incentivised to sell the product appropriately. Alternatively, the service needs to be simple enough for customers to manage themselves.
- Adding human support features to mobile phone-based services is likely to increase reach and long-term engagement. This could include interpersonal contact with promoters during registration, profiling, and implementation, as well as a well-functioning call centre. Also important is that farmers are made fully aware of available human support features and the conditions of their use (e.g. the call centre can be contacted free of charge).

3.1 Impacts of VFC on nutrition and livelihood outcomes

Based on the quantitative impact evaluation findings, being offered the VFC service or having used it at least once had no impact on households' and women's dietary diversity, agriculture production and income, or nutrition or agriculture knowledge or practices. The lack of impact of VFC can in part be explained by the low reach of, and very limited sustained engagement by farmers with, VFC.

Nevertheless, the subset of farmers who engaged with VFC for at least several months made at least some changes in their agriculture-related behaviours and practices (and to a lesser extent their nutrition-related behaviours and practices). The types of changes farmers made varied greatly and depended on their financial circumstances, capacities, and contexts.

The evaluation findings also suggest that offering VFC free of charge can positively affect farmers' attitudes towards, and use of, Vodafone as their network provider. However, reintroducing user fees for the service may negatively affect attitudes towards Vodafone.

3.2 Process of content development for VFC

The evaluation found high levels of overall acceptance of the content of VFC for the subset of farmers that used the service. Farmers perceived the agriculture tips as easy to understand, useful, and relevant. In particular, female farmers valued the agricultural and nutrition content. Trust in the credibility of the content of the service was generally high. Nevertheless, not all content was perceived as relevant to farmers' specific needs and the evaluation also suggests some potential areas for improvement, as follows:

- Nutrition tips were mainly valued by female farmers. However, there was a lack of focus in the nutrition tips on the main nutrition-related behaviour that VFC aimed to improve (i.e. dietary diversity). The reason for this is that the nutrition tips in VFC covered a large range of topic areas, including food preparation, food storage, and food and environmental hygiene, and only very few messages related to approaches to improve dietary quality or diversity. Furthermore, the frequency of nutrition tips (one to three per month) is likely to have been too low to trigger any quantifiable changes in behaviours. We recommend increasing both the frequency and the focus of the nutrition tips to promote a change in dietary practices more effectively.
- Poor farmers were very receptive to tips on practical, low/no-cost agricultural practices, especially as this information was often missing from other sources. Future interventions should focus on providing practical, low-cost agriculture and nutrition advice that is actionable and achievable within resource-poor contexts.

- The information needs of farmers change dynamically and farmers frequently looked for information that would help them to tackle individual, pressing agricultural or nutritional problems. Introducing and strengthening existing two-way communication channels (e.g. the VFC call centre or interactive dialogues) could enable farmers to actively seek the information they need at the time they need it.
- Poor tailoring of the content could result in disengagement with the service. Careful and individualised profiling during the initial registration process is vital to build trust and to ensure well-tailored content. However, this is also time-consuming, laborious, and difficult to conduct at scale. Experimenting with new approaches to profiling might help to achieve effective optimal tailoring without increasing the costs significantly.

3.3

Mobile phone-based services for behaviour change

Several features give mobile phones an advantage over 'traditional' channels for behaviour change communication:

- Mobile phones can help to address area and time-sensitive information needs (e.g. time-sensitive agriculture advice) more effectively and with less effort than most other information sources, even in remote, inaccessible settings (as long as there is sufficient network coverage).
- Mobile phone-based services are more convenient as information can be accessed at a time that is convenient for the farmer (assuming they have voicemail set up). This can help to address information asymmetries and saves time and resources as regards information-seeking.
- In particular, female farmers, who often struggled with multiple demands on their time and/or had mobility constraints, valued receiving mobile phone-based information on an ongoing basis.
- In a context of declining access to agricultural extension workers, mobile phone-based services potentially offer a low-cost mechanism for reaching farmers, and one that is more inclusive of low-income and female farmers.

However, there were several shortcomings of VFC that would need to be addressed to increase its effectiveness for behaviour change:

- The transmission of information (i.e. SMS and recorded voice messages) to passive audiences without an element of interactive engagement is likely to have limited the effectiveness of VFC in changing behaviours. Farmers require peer, social, or emotional support when attempting to adopt the advice from VFC. Strengthening the field presence and the call centre, and introducing other interactive components into mobile phone-based services, is likely to increase their effectiveness in changing behaviours.
- Radios are preferred over mobile phones for the delivery of information by many as this method of communication is more inclusive, not dependent on network coverage, and less distracting during farm work. The blending of mobile phone-based information and radio might make use of the advantage of both technologies and be more inclusive.

Other findings regarding the effectiveness of mobile phone-based services to change behaviours include the following:

- To increase the effectiveness of mobile phone-based behaviour change interventions, they could be joined up with other ongoing interventions (e.g. livelihood improvement programmes or social protection programmes), or with mobile money services that provide farmers with the financial resources needed to act upon VFC advice.
- Mobile phone-based advisory services such as VFC are unlikely to be effective as a stand-alone channel for behaviour change; they may perform best when integrated with traditional media and channels as part of a multi-level strategy. Mobile phone-based information could therefore be one part of a broad and many-pronged policy, and not the only component aiming to change behaviours and practices.
- Effective engagement with selected well-tailored mobile phone-based messages might be sufficient to trigger change. Thus, rather than focusing on increasing levels of ongoing engagement with mobile phone-based interventions, it should be acknowledged that farmers' engagement with the intervention is likely to vary over time.

3.4

Commercial viability of business models for VFC

- VFC was offered under both subscription and freemium business models. Financial modelling shows that, under certain circumstances, it would be possible for both of these approaches to be financially viable. Key assumptions relate to subscriber numbers, the cost of SMS messages, and average revenue per user (ARPU). Each of these assumptions has implications for the sustainability of the business model applied. In order to achieve the necessary subscriber numbers (in the order of 200,000), onboarding processes need to be addressed. Creating a simple product and a well-informed salesforce is key. Third-party service providers need to pay the real costs of bulk SMS messages, whereas an MNO may not allocate real costs to messages sent, making an MNO-hosted service more attractive. Targeting particularly low-income segments of mass market customers results in low ARPU.

- SMS costs are the largest single component of cost of sales. Including an MNO partner that can cover these costs can help to make mobile phone-based information services more commercially viable. It may therefore be easier to make a financial case for an agricultural advisory service hosted by an MNO rather than a third-party content provider, given that it is not clear that MNOs allocate real costs to SMS messages sent, whereas a content provider will buy bulk SMS messages at the market cost.

- Subscriber numbers for a mobile phone-based information service are crucial for commercial viability, but they have to be the right customers in order to maintain high retention rates. In a country the size of Ghana, the number required (around 200,000) represents a large proportion of the potential rural market. Extensive marketing would be required to reach all of the potential market. More importantly, barriers to adoption of the service would need to be overcome, especially in relation to registration and profiling, and there would need to be effective marketing by field agents who are trained and incentivised to sell the product and its features appropriately.

- Contracting in VAS (e.g. as Vodafone did with Esoko) enables an MNO to set up a service quickly and with minimal up-front costs. The drawback is that the MNO might then lack market understanding and expertise, making the product vulnerable to the partnership relationship. Contractual relationships, for example, provide little incentive to innovate. Future programmes should take the time needed to understand the nature of the partnerships involved.

- Mobile phone-based information services depend on multiple partnerships (including content and platform providers, and the MNO). Effective partnerships depend on personalities. Partnerships must be agile in order to respond to changing markets. Support initiatives should include some form of future-proofing to help mitigate changes that will occur over the duration of a programme.

- Mobile-based agricultural advisory services offer the promise of improving agricultural practices among low-income farmers at low cost. However, the study highlights a number of challenges faced by scaled-up SMS-based systems when trying to engage with their target group:

    - Each information delivery channel (e.g. SMS, outboard dialling (OBD), and interactive voice response (IVR)) has advantages and disadvantages in terms of cost, literacy, timing, permanent record, and so on. Hybrid approaches would be ideal, but financial sustainability is highly sensitive to the price of messages, making it difficult to take advantage of expensive, voice-based technologies.

    - Farmers lack the financial resources to implement changes to their agricultural practices.

    - Low-income farmers are risk averse, making them reluctant to implement new practices and making it more difficult to convince them to subscribe.

- The process of onboarding is crucial, and it needs to be simple and immediate. Providing a local presence to assist (e.g. through well-informed agents) is expensive.
- VFC offered a complex bundle of services that customers struggled to understand, especially when agents had a poor understanding of the product, tending to sell it as a SIM rather than as a VAS package.
- Financial sustainability is most challenging when serving customers with the lowest ARPU.

- Emerging digital agritech services may well provide more comprehensive packages of support for farmers, which may result in significant improvements. However, the barrier to adoption of these data-driven services is higher (in terms of digital literacy), so they risk widening digital divides and leaving the poorest behind.
- An agricultural advisory service such as VFC could be financially sustainable under certain circumstances. This raises questions about the ethics of spending public money on services that result in financial benefits for the private sector. There would therefore be value in the donor community engaging in discussion on how commercial returns can be used to reimburse expenditure from public funds (while still generating sufficient revenues for the MNOs involved).

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